



# The Gazette of Meghalaya

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### PART-IIA

#### GOVERNMENT OF MEGHALAYA

#### NOTIFICATIONS

The 25<sup>th</sup> August, 2023.

**No.FOR/CC/29/2019/Pt/688.** - Whereas, Meghalaya's natural heritage encompasses its sacred groves, captivating caves, ancient living root bridges, majestic waterfalls, serene lakes and rivers which add to the state's charm and ecological significance and not only offer breath-taking views and vistas for tourists and visitors but also provide essential resources for the local communities;

And, whereas, preserving and conserving this natural heritage is crucial for maintaining the ecological balance and sustaining the unique ecosystems and species found within the state and also to support and sustain nature based tourism in the State;

And, whereas, waterbodies are vital components of our planet's ecosystems and play a fundamental role in the water cycle, supporting diverse species, providing resources for human societies and offering recreational and aesthetic value;

And, whereas, many waterbodies in Meghalaya are threatened by discharge of untreated domestic and industrial effluents, use of chemical fertilizers and pesticides in catchment, disposal of solid waste, construction of buildings and other structures in close vicinity of their banks resulting in loss of biodiversity and disruption in flow of ecosystem services from the waterbodies;

And, whereas, threats to waterbodies have drawn attention of Hon'ble High Court of Meghalaya in proceedings held before them in Public Interest Litigation No. 10 of 2019 In Re.: Cleanliness of Uiam Lake vs State of Meghalaya;

And, whereas, the Hon'ble High Court of Meghalaya in a series of orders passed in the said Public Interest Litigation has directed the Government of Meghalaya to *inter-alia* formulate comprehensive guidelines for conservation and protection of waterbodies in Meghalaya;

Now, therefore, in compliance of directions issued by the Hon'ble High Court of Meghalaya and in supersession of the Meghalaya Waterbodies (Preservation and Conservation) Guidelines, 2023 notified by the Government of Meghalaya *vide* Notification No.FOR/CC/29/2019/Pt/637, dated 18<sup>th</sup> July, 2023, the Government of Meghalaya makes the following guidelines for conservation and protection of water bodies, namely:-

- 1. Short title, extent and commencement.** (1) These guidelines may be called the Meghalaya Waterbodies (Conservation and Protection) Guidelines, 2023.

(2) These guidelines shall extend to the whole of Meghalaya.

(3) These guidelines shall come into force on the date of their publication in Meghalaya Gazette.

**2. Definitions.** - (1) In these guidelines, unless the context otherwise requires,-

(a) '**Government**' means State Government of Meghalaya;

(b) '**prescribed**' means prescribed by the Government by a Notification published in the Meghalaya Gazette;

(c) '**regulated zone**' means individual plots of land located in immediate vicinity of the no-construction zone where construction of building and other structures shall be regulated in the manner provided in paragraph 5 of these guidelines;

(d) 'urban areas' means cantonments, census towns, master plan areas, municipal areas, scheme areas, district headquarters towns and such other areas as may be prescribed;

(e) 'waterbody' means a certain clearly distinguishable part of surface water, such as a lake, a pond, a stream, a river or a part of a stream or a river, but does not include paddy fields, irrigation canals, human made water bodies specifically constructed for aquaculture, seasonal rivers and streams or parts thereof where the entire bed remained dry for a period not less than 240 days during each of the past ten calendar years and also the ponds, water tanks and lakes where the entire bed remained dry for a period not less than 240 days during each of the past ten calendar years;

(f) 'waterbody setback' means an area located in immediate vicinity of the mean high flood level of a water body observed in the past ten years where no new construction of permanent nature except the structures and activities specified in paragraph 4 shall be permitted;

(2) The words and expressions used in these guidelines and not defined but defined in the Environment (Protection) Act, 1986 (No. 29 of 1986); the Wetlands (Conservation and Management) Rules, 2017(Published in the Gazette of India: Extraordinary *vide* G.S.R. 1203 (E), dated 26<sup>th</sup> September, 2017) and the Meghalaya Building Bye-Laws, 2021 (Published in the Gazette of Meghalaya *vide* Notification No.UAU.73/2016/Pt/402, dated 9<sup>th</sup> March, 2021) shall have the meaning assigned to them in the afore-mentioned Act, Rules and Bye-Laws.

**3. Activities prohibited in waterbodies.** - The following activities shall be prohibited in waterbodies, namely:-

(a) conversion for any other purpose including encroachment of any kind;

(b) setting up of any industry or expansion of existing industries;

(c) manufacture or handling or storage or disposal of construction and demolition waste covered under the Construction and Demolition Waste Management Rules, 2016; hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms Genetically Engineered Organisms or Cells, 1989 or the Hazardous Waste (Management, Handling and Transboundary Movement Rules, 2008; electronic waste covered under the E-Waste (Management) Rules, 2016;

(d) dumping of solid waste and bio-medical waste;

(e) discharge of untreated wastes and effluents from industries, cities, towns, villages and other human settlements.

- 4. Activities permitted in waterbody setback.** - (1) The following activities and structures shall only be permitted in the waterbody setback, namely:-
- (a) construction of boat jetties:  
Provided use of cheap quality plastic materials, as specified by the Meghalaya State Pollution Control Board, which results in discharge of any harmful chemical substance or micro-plastic particles in the water body shall be prohibited in construction of boat jetties;
  - (b) erection of boundary pillars;
  - (c) perimeter fencing of a nature which does not hinder in any manner free flow of rain water to or from the waterbody;
  - (d) bank stabilization activities including construction of embankment and retaining wall;
  - (e) construction of jack wells, pump-house and such other similar structures required for drawl of water from the waterbody;
  - (f) construction of dam, weir and hydro power plant;
  - (g) construction of footpath for public use;
  - (h) construction of unmetalled approach roads to extract sand, boulder and other minerals as per a valid licence or permit issued by the concerned competent authority;
  - (i) temporary storage of sand, boulder and other minor mineral extracted from the waterbody as per a valid licence or permit issued by the concerned competent authority;
  - (j) repair of existing buildings and other structures;
  - (k) erection of tents and semi-permanent rain shelters, gazebos and structures required to store tools, equipments and machineries required for water sports activities in the waterbody:  
Provided that all such structures shall be made up of bamboo, wood, thatch and such other renewable wood products without using cement and steel;
  - (l) temporary campsites, parks, gardens and playgrounds; and
  - (m) planting of trees, shrubs and other landscaping activities.
- (2) The structures constructed in the waterbody setback shall have design features and colour scheme which blend with the surrounding landscape.
- 5. Afforestation of waterbody setback.** - To prevent soil erosion and to enhance aesthetic beauty, dense plantation of native species shall be undertaken in the waterbody setback.
- 6. Construction Activities and Extent of waterbody setback.** - Extent of waterbody setback shall not be less than the same specified in column 3 of the Tables given in **Appendix I - IV** to these guidelines.
- 7. Regulation of activities in regulated zone.** - (1) Plot coverage, floor area ratio, number of floors and heights of buildings constructed in regulated zone shall not be more than the same specified in the Tables given in **Appendix I - IV** to these guidelines.
- (2) All the buildings and structures located in the regulated zone shall install appropriate facilities to ensure that no untreated solid or liquid waste is discharged into the waterbody.

- (3) In the buildings located in the regulated zone, septic tank, sewage treatment plant and effluent treatment plant shall be located from the waterbody setback at a minimum distance of 6 meter or half the depth of the plot, whichever is higher:

Provided that in the areas having steep slope where middle of the plot from the waterbody setback falls in the floor other than the ground floor, septic tank, sewage treatment plant, and effluent treatment plant shall be located at a minimum distance of 6 meter or three-fourth of the depth of the ground floor, whichever is higher.

- 8. Prohibition on the use of pesticides and chemical fertilizers.** - Pesticides and chemical fertilisers of such nature as may be prescribed shall not be used in the waterbody setback, regulated zone and such other areas located in vicinity of the regulated zone as may be prescribed.
- 9. Restriction on installation of hoardings, billboards, signage and certain built forms.** - Hoardings, billboards, signage and built forms of such size and such other specifications as may be prescribed shall not be installed in waterbody setback, regulated zone and such other areas located in vicinity of the regulated zone as may be prescribed to ensure unhindered view of waterbodies.
- 10. Implementation mechanism.** - (1) In the areas where provisions of the Meghalaya Building Bye-Laws, 2021 extend, authorities responsible for implementation of these Bye-Laws shall be responsible for implementation of these guidelines.
- (2) In the areas where provisions of the Meghalaya Building Bye-Laws, 2021 do not extend, these guidelines shall be implemented by such authorities in such manner as may be prescribed.
- (3) Construction activities, including works in progress of buildings granted permission under Meghalaya Building Bye-Laws, 2021 shall not come under the purview of these guidelines.
- 11. Monitoring Committee.** - (1) A Monitoring Committee under Chairmanship of Chief Secretary will be constituted to monitor implementation of these guidelines.
- (2) The Monitoring Committee shall meet at least once every three months.
- 12. Guidelines not in derogation of any other law.** - The provisions of these guidelines shall be in addition to and not in derogation of the provisions of any other law for the time being in force.

**D. P. WAHLANG,**  
Chief Secretary  
Government of Meghalaya  
Shillong.

**APPENDIX - 1**

Table : 1. SITING NORMS FOR BUILDINGS AND OTHER STRUCTURES FOR NON-RIVERINE WATERBODIES

Sl. No.	Area of water body	Extent of Waterbody Setback	Parameters for Regulated Zone				
			Maximum Plot Coverage	Maximum F.A.R.	Maximum number of floors	Maximum building height	Type of building
1.	Upto 1 ha.	10 m	40%	1.00	2	7.6 m from any part of ground level	Residential
						8.2 m from any part of ground level	Non-Residential
2.	1 ha. to 500 ha.	20 m	40%	1.00	2	7.6 m from any part of ground level	Residential
						8.2 m from any part of ground level	Non-Residential
3.	Above 500 ha.	50 m	40%	1.00	2	7.6 m from any part of ground level	Residential
						8.2 m from any part of ground level	Non-Residential

**APPENDIX - 2**

Table : 2. SITING NORMS FOR BUILDINGS AND OTHER STRUCTURES FOR RIVERINE WATERBODIES IN AREAS OTHER THAN URBAN AREAS

Sl. No.	Width of Riverine Waterbody	Size of Adjoining Plot	Extent of Waterbody Setback	Parameters for Regulated Zone				
				Maximum Plot Coverage	Maximum F.A.R.	Maximum number of floors	Maximum building height	Type of building
1.	Upto 4 m	Any size	10 m	50%	1.00	2	7.6 m from any part of ground level	Residential
							8.2 m from any part of ground level	Non-Residential
2.	More than 4 m	Upto 500 Sqm.	15 m	50%	1.0	2	7.6 m from any part of ground level	Residential
							8.2 m from any part of ground level	Non-Residential
		500 - 700 Sqm.	25 m	40%	0.8	2	7.6 m from any part of ground level	Residential
							8.2 m from any part of ground level	Non-Residential
		Beyond 700 Sqm.	50 m	40%	0.8	2	7.6 m from any part of ground level	Residential
							8.2 m from any part of ground level	Non-Residential

**APPENDIX - 3**

Table : 3. SITING NORMS FOR BUILDINGS AND OTHER STRUCTURES FOR RIVERINE WATERBODIES IN URBAN AREAS OTHER THAN MUNICIPAL AREAS AND CANTONMENTS

Sl. No.	Width of Riverine Waterbody	Extent of Waterbody Setback	Parameters for Regulated Zone				
			Maximum Plot Coverage	Maximum F.A.R.	Maximum number of floors	Maximum building height	Type of building
1.	Upto 3 m	5 m	As per the Meghalaya Building Bye-Laws, 2021				
2.	More than 3 m	10 m	As per the Meghalaya Building Bye-Laws, 2021				

**APPENDIX - 4**

Table : 4. SITING NORMS FOR BUILDINGS AND OTHER STRUCTURES FOR RIVERINE WATERBODIES IN CANTONMENTS AND MUNICIPAL AREAS

Sl. No.	Width of Riverine Waterbody	Extent of Waterbody Setback	Parameters for Regulated Zone				
			Maximum Plot Coverage	Maximum F.A.R.	Maximum number of floors	Maximum building height	Type of building
1.	Upto 3 m	3 m	As per the Meghalaya Building Bye-Laws, 2021				
2.	More than 3 m	6 m	As per the Meghalaya Building Bye-Laws, 2021				

REPORT OF EXPERT COMMITTEE ON RESTORATION & PROTECTION OF WATER BODIES  
CONSTITUTED BY GOVERNMENT OF MEGHALAYA  
IN COMPLIANCE TO THE HON'BLE HIGH COURT OF MEGHALAYA ORDER DATED 3<sup>RD</sup> JUNE 2023  
RELATED TO PIL 10/2019

**BACKGROUND NOTE ON THE EXPERT COMMITTEE  
ON WATER-BODIES**

- In compliance of Hon'ble High Court of Meghalaya order dated 3<sup>rd</sup> June, 2022 in PIL No. 10/2019 in the matter of cleanliness of Umiam Lake, Govt. of Meghalaya constituted an Expert Committee to advise the State Government on measures to be taken for restoration and protection of water-bodies in the State.
- Further, in compliance to the Order dated 15<sup>th</sup> November, 2022 in PIL No. 10/2019, the Expert Committee was re-constituted by the State Govt. on 19<sup>th</sup> January, 2023 to advise the State Government on measures to be taken for restoration and protection of water-bodies in the State and laying guidelines for protection of water-bodies in the State and formulating norms for future constructions in around Umiam Lake.
- Again, in compliance to the Order dated 2<sup>nd</sup> February, 2023 in PIL No. 10/2019, the Expert Committee was further re-constituted by the State Govt. on 15<sup>th</sup> March, 2023 by adding 2 aquatic experts in the said Committee. Also, one sub-Committee was also notified by the State Govt. on 15<sup>th</sup> March, 2023 to draft Construction Guidelines/Norms around Water-bodies.
- The following eight meetings of the Expert Committee have been held so far:
  1. First meeting of Expert Committee – 20<sup>th</sup> July, 2022
  2. Second meeting of Expert Committee – 13<sup>th</sup> October, 2022
  3. Third meeting of Expert Committee - 17<sup>th</sup> February, 2023
  4. Fourth meeting of Expert Committee - 16<sup>th</sup> May, 2023
  5. Fifth meeting of Expert Committee – 27<sup>th</sup> July, 2023
  6. Sixth meeting of Expert Committee – 3<sup>rd</sup> August, 2023
  7. Seventh meeting of Expert Committee - 10<sup>th</sup> August, 2023
  8. Eighth meeting of Expert Committee - 18<sup>th</sup> August, 2023
- The Sub-Committee also had 2 sittings (on 17<sup>th</sup> April, 2023 and 3<sup>rd</sup> May, 2023) to discuss the Draft Guidelines/Norms for Construction, as per its mandate. The same was presented to the Expert Committee for further discussion and recommendation.
- Gist of Actions taken by Expert committee:
  - (i) Parameters and criteria for identification of the water bodies were finalized during the 1<sup>st</sup> meeting of Expert Committee held on 20<sup>th</sup> July, 2022 and same was circulated to all the Deputy Commissioners.
  - (ii) Committee advised Deputy Commissioners to nominate Nodal Officers from each district for better coordination amongst line departments.

- (iii) 2<sup>nd</sup> Meeting (through VC) along-with the Deputy Commissioners and the Nodal Officers was held on 13.10.2022 for better clarity and understanding of requirement.
- (iv) Expert Committee has finalized inclusion and exclusion lists of water bodies to avoid the duplicity of actions.
- (v) Recommendation of Draft Norms/Guidelines for future construction around water-bodies, apart from Draft Guidelines for Protection and Conservation of Water-Bodies.

## Part 2:

### GUIDELINES FOR UMIAM LAKE Water Quality, Aquatic Life & Other Fauna

#### Umiam Lake: Water Quality, Fish Health & Livelihoods:

Umiam is a manmade lake known for its widespread beauty. The lake is a habitat for many organisms including fishes (carps, barbs, snakeheads, catfishes, glass fishes), prawn, crabs, amphibians and insects. The surrounding area of Umiam Lake is a breeding ground for local and migratory birds. Massar (2013) reported that this water body used to be the main source of livelihood for about 200 to 250 fishermen in the past. With a declining trend in fish population in recent years, the number of fishermen has come down to about 60 people daily, and yet, none of them can depend solely on the lake for their livelihood. The reason for this decline in fish population is contamination of the lake with pollutants. From the time of its inception till date, Umiam lake serves as a cesspool of the waste materials of Shillong and many other villages through Wahumkhrach, Umshyrpi and Umiam rivers which bring in tonnes of solid and liquid waste daily. According to Massar *et al.*, (2011, 2012, 2013, 2014), Umiam Lake's pH fluctuates throughout the year; the dissolved oxygen is less (Table 1); concentration of lead and cadmium is high (Table 2); fish tissues studied with electron microscopy showed deformed, damaged and abnormal structure of the nuclei, mitochondria, ER. Moreover, the same study recorded high concentration of lead and silicon in the surface of RBCs of the fish (Fig. 1). The findings of the study done in 2013 prove that the water quality of Umiam Lake is contaminated with heavy metals and the unhealthy fish are unsafe for human consumption. As recent as June 2023, the Meghalaya State Pollution Control Board (MSPCB) conducted its own tests with findings that showed the water quality status as "Not Satisfactory" (Table 3).

With clear data that highlights the current status of the poor water quality, it is evident that urgent measures need to be undertaken for Umiam Lake. It is evident that steps need to be underway to uplift local communities, develop sustainable tourism activities or their auxiliary community growth, and protection for the local fauna and flora to thrive.

#### Shillong: Primary Pollutant of Umiam Lake:

The lake is contaminated with a poisonous mix of solid and liquid waste brought by the multitude of drains, streams and rivers that flow through Shillong. Waste materials may include metal-based paints, steel alloys, pesticides, discarded batteries, fossil fuel waste, household garbage, plastics, toilet waste amongst others. While cleanup efforts have been made by the government and independent public bodies from time to time, general civic sense as well as a lack of dedicated and purpose-built infrastructure to deal with this major issue leave the problem largely unresolved. Control, monitoring and enforcement regarding effluents, from Shillong as a whole, ultimately goes unchecked and pollution finally culminates at Umiam lake.



The landfill at Mawiong, situated close to Umiam lake, is another direct source of pollution. Strong walls built in recent years prevented the collapse of the immense hills of solid waste, but during the monsoon season, rain water percolates, and effluents continue to end up at the lake.

#### **Fertilisers & Pesticides: Amphibians and Endemic Wildlife:**

Excessive use of fertilisers and pesticides in agriculture can have both direct and indirect negative impacts. Not only can it lead to chemical pollution but it also has a secondary detrimental effect on non-target organisms like beneficial insects, birds, amphibians, and other wildlife. This disruption in the ecosystem can have cascading effects, affecting the entire food chain and overall biodiversity. Balancing fertiliser and pesticide use with sustainable farming practices is crucial to mitigate these harmful effects. Most of the fertilisers and pesticides are transported to the water bodies through surface run off and these ultimately enter the organisms through contact and food web (Brown and Casida, 1987; Edwards, 1973; Murty, 1986). Studies conducted by various workers have found that nitrogenous fertilisers applied in croplands and other agricultural areas have a negative impact on the growth, development, survival and the behaviour of amphibians (Oldham and Hilton-

Brown, 1992; Baker and Waights, 1993; Hecnar, 1995; Marco and Blaustein, 1999; Marco *et al.*, 1999). Similar findings have also been reported in other organisms such as fishes when exposed to fertilizers (Sangeetha *et al.*, 2011).

In the context of Meghalaya where 81 % of the population is dependant on agriculture, the use of chemicals in the form of fertilizers and pesticides have resulted in an increase in the production of food grains (<http://www.megagriculture.gov.in>). Studies on the effect of such chemicals on the life of non target organisms particularly the amphibians have been carried out by Dr. Mattilang Kharkongor *et al* (2018). This study was undertaken to evaluate the effects of insecticide chlorpyrifos (the second largest selling insecticide in India), on hatching, mortality and morphology of *Duttaphrynus melanostictus* embryos (the common Asian toad) from a stream at Mawpat, Shillong. The study clearly revealed that the commercially available chlorpyrifos (Tricel, chlorpyrifos 20 % EC) at sub-lethal doses showed morphological abnormalities in the body of the embryos of *Duttaphrynus melanostictus* which can be lethal to the animal. Hence, it is recommended that the use of chlorpyrifos should be restricted for the good health of the ecosystem and conservation of biological entities including many other amphibians found in different water bodies.

In another study conducted by Susan J. Nongkynrih and co-workers, they assessed the effect of a nitrogenous fertilizer (urea) on some developmental stages (embryos, hatchlings and tadpoles) of the anuran species, *Duttaphrynus melanostictus* from water bodies in and around Mawsynram during the year 2022. This study revealed that the application of urea at higher doses in agricultural fields have detrimental effects on the survival of the embryonic and larval stages of development of the amphibian species. Similar findings have also been reported earlier that pure form of urea applied to croplands could affect larval amphibians at extremely high concentrations (Schuytema and Nebeker, 1999a). Griffis-Kyle and Ritchie, (2007) have suggested that the interactions between nitrogenous pollutants and amphibian survival may be critical to the long term management and recovery of amphibian populations. The entire catchment area of Umiam lake is adversely affected by the use of fertilisers, pesticides and insecticides. With seasonal rain and runoff carrying these deadly chemicals downstream, scientific studies as well as the yearly occurrence of algal blooms are testament to their detrimental affects.

#### **Algal Blooms in Umiam Lake:**

The yearly algal bloom (cyanobacteria) in Umiam Lake as well as other water bodies are now a well documented phenomenon. This problem is caused by a combination of factors such as excess nutrients or nutrient pollution like nitrogen and phosphorous. These come from agriculture runoff, sewage discharge,

fertilisers, and various other effluents primarily from Shillong city. There are also other related factors, but excess nutrients are conclusively proven to be the primary cause for algal blooming. The process of nutrient oversupply leading to the growth of algae and depletion of oxygen is called eutrophication. Eutrophic lakes, such as Umiam, produce toxins that are fatal to aquatic organisms, harm wildlife and contaminate human drinking water sources underground and downstream. In addition, algal bloom prevents the penetration of sunlight into the water body, resulting in the depletion of dissolved oxygen leading to "dead zones" where aquatic life cannot survive which ultimately degrades the entire eco-system of the water body. Algal bloom in Umiam Lake is a regular phenomena, especially when the water level is low, and preventing it involves reducing nutrient pollution, improving water circulation and monitoring water quality on a regular basis. This is a complex issue which requires a combination of efforts from the government, farmers and communities to ensure the health of the water body and the ecosystem they support.

#### **Noise Pollution:**

Noise pollution is the first true pollutant from human activity and is often overlooked when addressing environmental issues. Noise in areas around wetlands and water bodies strongly need to be regulated to a minimum level. Some of the wetlands serving as tourist destinations and also as picnic spots attract both local and outstation tourists. Commercial businesses around the lake, both private and government owned, regularly have events that go on till early morning. Vehicles parked along roads, with loud speakers, are often seen with occupants having roadside parties resulting in littering and being unsafe for other members of society.

In such places, playing of loud music results in noise pollution which affects the breeding and mating behaviour of animal species that thrive in water bodies and wetlands. This is exemplified in the case of amphibians which rely on mating calls produced by the male frog for successful mating. The endemic and endangered bush frog, *Raoachestes shillongensis*, found in Shillong and surrounding environs, is one such example where the females will be unreceptive if the mating calls of the males go unheard. Noise pollution directly results in the decline of a truly unique and precious species that is endemic to our lands and is found nowhere else. Similarly, this can also affect the breeding of many water and migratory birds that are present particularly in Umiam Lake. This behavioral pattern is not exclusive to any one species, and when taking into context the rich diversity of wildlife around Umiam Lake, it is painfully evident that noise pollution needs to be addressed to preserve wetland areas.

#### **Umiam Lake: Avian Hotspot & Current Status:**

Meghalaya has 422 species of birds observed on eBird. eBird is among the world's largest biodiversity-related projects for bird documentation based on simple & scientific frameworks. Till date, Meghalaya has 5493 bird sighting checklists submitted online by 559 enthusiasts registered on eBird with 103 hotspots marked all across the State. So far, Meghalaya's bird species are an impressive tally of roughly 31% of the national total of 1359 species in total. This is of course, only on the platform of eBird with readily available and accessible data, the true count may very well be higher.

Umiam lake and its surrounding hills, with many forested patches still intact, may potentially provide habitation of upto 40 or 50 percent of the total species found in Meghalaya including rare migratory species. Some of the rare species observed and documented are the Lesser Sand Plover, Common Redshank, River Tern, Common Shelduck, Great Crested Grebe, Little Grebe, Pheasant-tailed Jacana, Brown-headed Gull, Black Stork, Greater Necklaced Laughingthrush and more. Aside from the fragile and fast disappearing habitat of the endemic birds, the migratory birds also depend on Umiam lake and its environs for their winter breeding grounds.

**Table 1. Physico-chemical Characteristics of Control (RRTC Fish Pond) and Pollution-exposed Water (Umiam Reservoir)**

Parameters	RRTC Fish Pond	Umiam Reservoir	Desirable Range
pH	6.0 - 7.5	5.0 - 9.5	6.5-9.5
Dissolved Oxygen (mg/L)	6.4 - 7.5	4.8 - 7.2	7-9
Conductivity (microS/cm)	HO-120	98-115	100-2000
Free CO <sub>2</sub> (mg/L)	5-9	12-16	5- 10*
Hardness (mg/L)	100-110	122-264	50-150
Total Alkalinity (mg/L)	55-60	32-44	50-150

Tables & Figure showing the Water Quality of Umiam Lake

**Table 2. Content of Heavy Metals in Control (RRTC Fish Pond) & Pollution-exposed Water (Umiam Reservoir)**

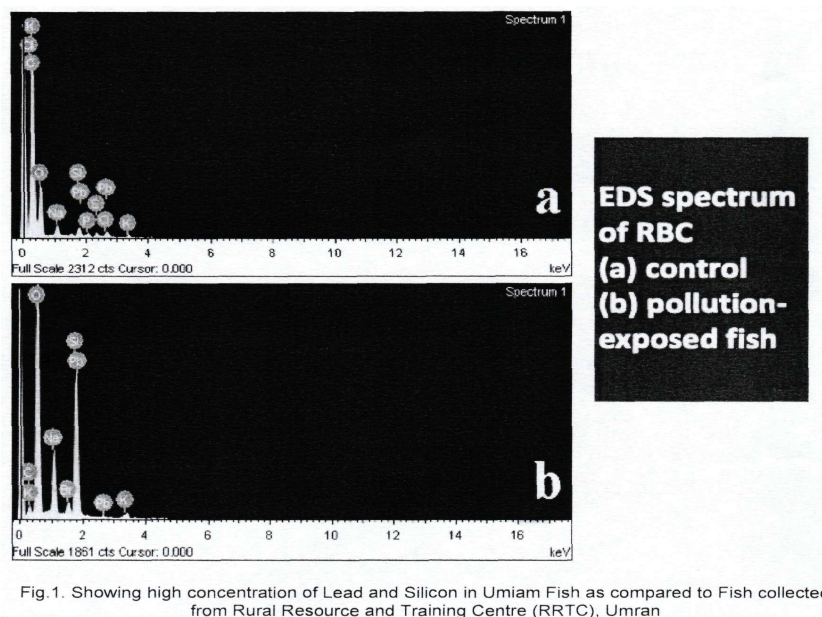
Heavy Metal	RRTC Fish Pond (mg/L)	Umiam Reservoir (mg/L)	Permissible limit mg/L (WHO)
Cu	0	0.013 ±0.01	2.0
Fe	0.23 ± 0.4	0.7 ±0.01	1-3
Pb	0	0.12 ±0.03	0.01
Ni	0	0.07 ±0.1	0.07
Cd	0	0.03 ±0.01	0.003
Zn	0.08 ± 0.8	0.03 ±0.01	3.0
As	0	0	0.01
Cr	0	0.002 ±0.01	0.05

## WATER QUALITY INDEX OF SURFACE WATER BODIES AT UMIAM LAKE FOR JUNE, 2023

Station Code	WATER → QUALITY CRITERIA LOCATION NAME ↓	pH 6.5 -8.5	DO >5.0 Mg/1	BOD <3.0 Mg/1	FC <2500 MPN/100 ml	TC <5000 MPN/100 ml	FS <500 MPN/100 ml	Water Quality Status
1347	UMIAM	7.3	5.6	5.0	790	3300	210	Not satisfactory
3346	UMIAM LAKE AT OUTFALL OF UMIAM RIVER	6.9	4.4	4.8	1200	4300	310	Not satisfactory
3347	UMIAM LAKE MIDDLE POINT	7.2	5.7	5.2	790	2700	250	Not satisfactory
3348	UMIAM LAKE NEAR UNION CHRISTIAN COLLEGE	7.1	5.5	5.6	630	4100	150	Not satisfactory

Table 3: Water quality index of Umiām Lake.

Study conducted by Meghalaya State Pollution Control Board.



**Recommendations:**

*In cognizance of other draft guidelines being formulated by this same Expert Committee with regards to general protection, construction and other actions vis a vis Umiam lake, the suggestions in this draft guideline relate specifically to Water Quality, Aquatic Life & Other Fauna. Other recommendations, that are equally crucial, are covered by the submissions of the Expert Committee as a whole.*

**1. Clean the Catchment of Umiam Lake**

Cleaning Umiam lake without cleaning its source is a fruitless effort. The several causes of this gargantuan problem have to be addressed upstream individually before improvements in the water quality downstream are witnessed. Whether tackling the garbage choked rivers in Shillong, effluents from the Mawiong landfill, or chemicals carried by rainfall runoff from the entire catchment, it is clear that no one single solution will fix all problems. While public participation is crucial, strong Government intervention in terms of political will, legislation, expertise of various line departments, private/non-governmental parties, the active participation of local communities and adequate funding are all necessary to carry it through.

**2. Awareness Programs for Farmers**

It is important to generate awareness in our local farmers about the ill-effects of fertilisers and pesticides. If possible, complete prohibition and banning the usage of such chemicals in the catchment area which falls within the prescribed Restricted zones of 50m + 300m. Organic farming could be encouraged as a higher value alternative, or the promotion of hardier endemic species of crops or fruits. This in turn would support a wider range of plant and animal species diversity leading to conservation in the region. This ban also addresses the serious issue of yearly Algal blooms seen in Umiam lake. The elimination of fertilisers and pesticides, atleast within the Restricted Zones, will help safeguard all the organisms including humans, who are at the end of the trophic level receiving the maximum amount of these harmful chemicals due to bioaccumulation.

**3. Noise Levels within the 50m + 300m Restricted Area**

Noise from parked cars, parties, weddings, concerts, events in and around water bodies especially Umiam Lake are completely unregulated. As the area increases in popularity, noise needs to be regulated so as not to drastically degrade the entire area with noise pollution. Noise levels of all activities including, but not exclusive to, private parties, weddings, events, concerts, parked cars along roads must be regulated within the 300m Restricted Area. All noise including music should not be heard beyond a distance of 100m and must completely stop by 10pm.

**4. Hunting and Trapping Complete Ban**

There is currently widespread use of slingshots and traps for the purpose of trapping birds and other animals for sport. Photo evidence has also been taken of a migratory Black Stork, its legs hopelessly crushed by a bear trap on one of the islands at Umiam Lake. Trapping of amphibians and crustaceans for consumption is a popular activity among local communities, but the populations of these endemic species are declining rapidly. Larger mammalian fauna are also vulnerable to the same practices of being over-hunted for sport or local consumption. Therefore restrictions or prohibitions for hunting and trapping are advised if the local biodiversity is to be preserved for our State's future.

**5. Removal of Unused/Discarded Fishing Lines & Nets**

Not only an eyesore and an environmental pollutant, these items when carelessly discarded are dangerous if not fatal to the fauna found around and in the lake, including birds. It is necessary to raise awareness amongst

fishermen and the communities around Umiam Lake to remove unused nets and fishing lines for the safety of all fauna.

#### **6. Promotion of Bird-Watching Tourism Projects**

With an annual growth of 20% on some major bird-watching community projects, bird-watching is another tourism avenue that is yet unexplored. Whether facilitating local guides to be trained for future employment or conducting tours and programs for the various bird-watching seasons, there are multiple options that both public and private sectors can explore, especially since Guwahati is now a short drive away.

#### **7. Enforcement of Wildlife Act for the Protection of Fauna in Umiam Lake**

Whether for the endemic populations or migratory species, protection is required for conservation in these areas. Improved on-ground-presence from relevant departments, is urgently required to enforce existing laws and also be a nodal point for passionate citizens and interested organisations to help support the process of conservation and stewardship.

#### **8. Regular Monitoring of Water Quality at Umiam Lake**

Regular monitoring of the water body (physico-chemical parameters and width, depth) is necessary to know its status as a habitat for aquatic organisms. This will serve as indicators of water quality for aquatic life and whether resources from these water bodies are safe for consumption. Timely tests will also give a progress report not only of the lake itself but also on the efficacy of remedies undertaken to manage the catchment's pollution levels upstream. Tests should be conducted at various points simultaneously at different points of the lake (mouth of the largest river, furthest point from the largest river flowing in, middle of the water body, other strategic points as deemed necessary) and these testing points should be used at a 3 month interval every year.

#### **9. Schemes to Promote Re-Forestation & Endemic Floral Species**

Around the catchment area of Umiam Lake, with a concentration on, but not limited to, the Restricted Zones of 50m and 300m, forestation drives and planting of endemic species of trees and plants should be undertaken. An increase of endemic floral biodiversity will not only help address issues such as climate change and top soil run-off during rains but will also benefit the steadily depleting eco-system of Umiam lake and its surrounding catchment areas as well.

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**Part 3:**

**ADDITIONAL MATERIAL FOR REPLY OF PARA 5 OF THE HON'BLE MEGHALAYA HIGH COURT ORDER  
DATED 19<sup>TH</sup> JULY, 2023**

**Para 5 (PIL 10 of 2019)**

*The State must indicate the measures taken by it to arrest deforestation as stretches along the highways all over the State reveal felling of trees and more and more of the mountain being chopped off for construction purposes. Though, officially, there are previous claims by the State that more than 72 per cent of its total area is covered by forest, it would be interesting to ascertain whether any recent survey in such regard has been conducted for such report to be placed before the Court.*

**Reply: 1. The measures taken:**

- a. Setting up of check gates to check illegal transport of forest produce
- b. Patrolling by forest staff and officers
- c. Use of water marked transit pass
- d. Comprehensive amendment of Meghalaya Forest Regulation Act 1973 in 2021 providing more stringent punishments / penalties
- e. 880 offence reports have been filed in various competent courts during the last 10 years ending March 2023. A total of 133 vehicles were also seized during the said period.
- f. In order to combat deforestation, the State carried out various afforestation works under various State and Central schemes. Accordingly, in the last 5 years about 2491.27 Ha has been taken up for afforestation.
- g. In pursuance of National Forest Policy the State has formed 366 Joint Forest Management Committees to promote participatory management of forests.
- h. Under the provision of Wildlife Protection Act, Meghalaya has notified 2 National Parks covering an area of 267.48 sq. kms. Further 4 Wildlife Sanctuaries have been notified covering an area of 94.107 sq. kms. 84 Community Reserves covering an area of 6885.26 Ha has also been notified by the State Government to compliment the footprint of protected area network of the State.
- i. Meghalaya has inventoried 64 numbers of Sacred Groves which are owned and managed by the Community and the clans. This is intended to strengthen and promote conservation and protection of community forest resources.
- j. Under Biological Diversity Act 2002, Meghalaya has constituted 6484 Biodiversity Management Committees commensurate with the number of villages as per 2011 census.
- k. Further Meghalaya has notified 1 Biodiversity Heritage Site in the year 2018 which is located at Ri-Bhoi District.



- I. However, there are challenges as well given the fact that Meghalaya is a VI Schedule State in the Indian Constitutional scheme where ownership of about 95% of the total geographical area of the State lies with the individuals and communities who are also administered by the Autonomous District Councils.  
 - Nevertheless, in consonance with the Forest Policy of India and to infuse some form of scientific management of these private / community owned forests 242 working schemes covering an area of 4173.71 Ha has been prepared and approved by the competent authority and the same is being implemented.
2. Tree cutting and land development works does take place along the roadsides which is being done following due procedure as per extant laws and regulations applicable. Permission for tree felling is granted by the State under the following Acts and Rules:
  - (a) Forest Conservation Act 1980
  - (b) Meghalaya Tree Felling (Non-Forest Areas) Rules 2006
  - (c) Meghalaya Tree Preservation Act 1976
  - (d) Working Scheme areas as approved by the competent authorities

Accordingly, the number of trees being felled / cleared along the roads under various Acts and Rules for the last 5 years ending March 2023 is as follows:

<b>Acts &amp; Rules</b>	<b>Area diverted in Hectares, if applicable</b>	<b>Number of trees felled</b>	<b>Compensatory Afforestation, if any (in Hectare)</b>
1. Forest Conservation Act, 1980	61.58	12687	79.293
2. Meghalaya Tree Felling (Non-Forest Areas) Rules 2006	-	14711	-
3. Meghalaya Tree Preservation Act 1976	-	288	-
<b>Total</b>	<b>61.58</b>	<b>27,686</b>	<b>79.293</b>

3. The forest cover of the State as per India State of Forest Report 2021 (published by Forest Survey of India) stands at 76 % which is above 66% threshold as stipulated in the National Forest Policy. Nevertheless, it is the endeavor of the State to continuously work for improvement of the State's forest cover.
4. As mentioned above Meghalaya is a VI Schedule State and by virtue of which the control and management of 95% of the geographical area of the State lies with the community and private owners' of land who are again largely under the administrative control of the Autonomous District Councils. The typical land tenure system of the State thus creates a situation where total control of land development activities by private or community owners becomes complicated and challenging in the administrative matrix of the State. Nevertheless, it is the endeavor of the State to continuously work for improvement of the State's forest cover.

**Part 4:****ADDITIONAL/SUPPLEMENTARY INTERVENTIONS:**

As regards measures in addition to the above, aimed at mitigating and rejuvenating the Rivers Wah Umkrah and Wah Umshyrpi a High Power Committee has been constituted by Government of Meghalaya as appended in Annexure - .... The Committee, besides the principal Apex Committee headed by Chief Secretary, Government of Meghalaya, comprises of 2 Sub-Committees for implementation of the mandate with each having its specific Terms Of Reference.

The 5<sup>th</sup> May, 2023.

**No.FOR./CC/18/2022/Pt/395.** - In pursuance to decisions taken during the Stakeholder Consultation meeting held on 14<sup>th</sup> April, 2023 with Khasi Hills Autonomous District Council, Dorbar Shnongs and Civil Society Organisations, the Governor of Meghalaya hereby pleased to constitute an Apex Committee and Sub-committees for the purpose of rejuvenation and restoration of Wah Umkrah, Wah Umshyrpi & Wah Umkhen rivers in Shillong with the following members:-

**1. Apex Committee:-**

1	The Chief Secretary	Chairman
2	Senior-most Secretary of Home (Police) Department/ Urban Affairs Department/ Public Health Engineering Department/ Planning Department/ Finance Department/ Water Resources Department.	Members
3	Senior-most Secretary of Forest & Environment Department	Convener
4	The Principal Chief Conservator Forest & HoFF	Members
5	The Chairman, Meghalaya State Pollution Control Board	
6	Deputy Commissioner, East Khasi Hills District	
7	Shri Nababrata Bhattacharjee, Chairman SEAC	
8	Secretary to Executive Committee, Khasi Hills Autonomous District Council	
9	Smti Patricia Mukhim, Editor of The Shillong Times and Operation Clean Up	
10.	Shri R L Blah Synjuk Ki Nongsynshar Ka Bri Hynnewtrep	
11.	Shri. R. S. Marbaniang, Rangbah Shnong of Wahiingdoh	
12	Shri Bantyllilang Nari, Rangbah Shnong of Nongrim Hills	
13	Shri P Pyngrope, Rangbah Shnong of Nongrah	
14	Shri. Nicholas Kharnami, R J Nicky J, Radio & Eco-Activist (PLA IEW), Pynthorbah	
15	Representative of All India Institute of Local Self Government	

**Terms of Reference of Apex Committee:-**

1. Approve Action plan for of rejuvenation and restoration of Wah Umkhrah, Wah Umshyrpi & Wah Umkhen rivers in Shillong.
2. Review the progress on implementation of Action plan.
3. Identify funds and provide funds for rejuvenation and restoration of Wah Umkhrah, Wah Umshyrpi & Wah Umkhen Rivers.
4. Recommend enabling provisions for various bodies, if required.
5. Chairmen may induct other expert members/stakeholders as per requirement.

**2. Sub-Committee on Solid & Liquid Waste Management**

1	Additional Chief Secretary, Water Resources Department	Chairman
2	Secretary, Water Resources Department	Convener
3	Secretary, Forest & Environment Department	
4	Chief Engineer, Public Health Engineering Department	Members
5	CEO Shillong Cantonment Board	
6	CEO Shillong Municipal Board	
7	Shri. S Syiem Environmental Engineer MSPCB	
8	Representative of Deputy Commissioner, East Khasi Hills District	
9	Representative of KHADC	
10	Shri B Datta, Director (Retd) Urban Affairs Department	
11	Smti Roma Nongpiur	
12	Rangbah Shnong of Umpling	
13	Rangbah Shnong of Demseiniong	
14	Rangbah Shnong of Mawprem	
15	Rangbah Shnong of Rilbong	
16	Secretary Police Bazaar Welfare Society	

**Terms of Reference of Sub-Committee:-**

1. Prepare Action Plan for rejuvenation and restoration of Wah Umkhrah, Wah Umshyrpi & Wah Umkhen rivers in Shillong.
2. Set targets and timeline for implementation of Action plan.
3. Clearly identify Executing Agency/Department.
4. Review achievements against targets on regular basis.
5. Estimate the requirement of funds & propose to Apex Committee.
6. Suggest measures for effective enforcement of rules and penalty on violators.
7. Review action taken against violators for dumping of waste into river, release of effluents, untreated sewage and faecal matter into rivers.

8. Submit monthly progress reports to Apex Committee.
9. Chairmen of Sub-Committee may induct other expert members/stakeholders as per requirement.

**3. Sub-Committee on Sustainability & System Improvement.**

1	Commissioner & Secretary, Urban Affairs Department	Chairman
2	Director Urban Affairs Department	Convener
3	Director Soil & Water Conservation Department	Members
4	Chief Conservator of Forests (Social Forestry & Environment)	
5	Member Secretary, MSPPCB	
6	Chief Engineer (Environment & Sanitation) PHED	
7	Chief Engineer Water Resources Department	
8	Representative of Deputy Commissioner, East Khasi Hills District	
9	Representative of KHADC	
10	Shri Rudi Warjiri IFS(Retd.) Shillong	
11	Shri Bryan Wahlang Shillong	
12	Rangbah Shnong of Lapalang	
13	Rangbah Shnong of Pynthorumkhrah	
14	Rangbah Shnong of Mawlai	
15	Rangbah Shnong of Laban	
16	Rangbah Shnong of Mawbah	

**Terms of Reference of Sub-Committee:-**

1. Prepare action plan for beautification and landscaping and plantations around these rivers for sustainability.
2. Set targets and timeline for implementation of Action plan.
3. Clearly identify Executing Agency/Department.
4. Review achievements against targets on regular basis.
5. Protect catchment areas of these rivers and augment water flow.
6. Identify problems at source and suggest remedial measures.
7. Estimate the requirement of funds & propose to Apex Committee.
10. Submit monthly progress reports to Apex Committee.
11. Chairmen of Sub-Committee may induct other expert members/stakeholders as per requirement.

**S. M. A. RAZI,**

Commissioner and Secretary to Govt. of Meghalaya,  
Forest and Environment Department.

The 18<sup>th</sup> July, 2023.

**No.FOR.CC/18/2022/Pt/401.** - In continuation to this Department's Notification No.FOR./CC/18/202/Pt/395, dated 5<sup>th</sup> May, 2023, the following persons are inducted in the Apex Committee and the Sub-Committee on Solid & Liquid Waste Management for the purpose of rejuvenation and restoration of Wah Umkhras, Wah Umshyrpi & Wah Umkhen rivers in Shillong.

**1. Apex Committee**

1	The Chief Executive Officer, Shilong Municipal Board	Members
2	The Chief Executive Officer, Shillong Cantonment Board	
3	Syiem of Hima Myllem	

**2. Sub-Committee on Solid & Liquid Waste Management**

1	Commissioner & Secretary, Public Engineering Department	Co-Chairman
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However, the members of the Sub-Committee on Sustainable & System Improvement as notified *vide* Notification No.FOR./CC/18/202/Pt/395, dated 5<sup>th</sup> May, 2023 shall remain unchanged.

**S. M. A. RAZI,**  
Commissioner & Secretary to the Govt. of Meghalaya,  
Forest & Environment Department.